

receiver at step 3406. This allows the application to determine that the auxiliary is associated with the parent media source by storage in the conference component for later retrieval at step 3408. If the auxiliary is received prior to the receipt of a join message, then the association of the auxiliary with the parent conf ID allows the later association of the two from the application's standpoint.

An Example Session (FIGS. 35a and 35b)

An example session using the protocols described above is shown in FIGS. 35a and 35b. The figures illustrate the flow of messages, from the view of a first endpoint. After establishment of the connection between the stations using the transport component, the originating station sends capabilities message 3502, and hello message 3504, specifying the calling station's name "James Watt" with the mode mask set to 15 (all bits set—send, receive, joiner, shareable). Then, a call message 3506 is transmitted to the receiver along with the timeout value=19392 confname="some conference," and the confID="672 mlkalkJamesWatt: VideoPhone: VideoZone". Simultaneously with the establishment of the connect, corresponding capabilities, hello, and response are sent from the station entitled "Hillary Rodham" as illustrated by packets 3508–3512, having the same mode.

Subsequent to the exchange of capabilities, hello, and call and response, a merge message 3514 is received by the first endpoint including the conference name "Some Conference", a conf ID=137 "mlkalk Hillary Rodham: Video Phone: Video Zone" and a member list. The endpoint then processes the merge, placing a call sending capabilities, and hello to a member of the old conference, and a join along with the member list as shown by messages 3516, 3518, and 3520. Once the connection has been established, capabilities and hello messages 3524 and 3526 are received from the recipient. Responsive to the join the recipient sends a response message 3528 with the result=0 (request successful). Subsequent thereto, the endpoint then attempts to use a multicast address by transmitting broadcast request messages 3530 and 3532. The other members respond with broadcast Acks 3534 and 3536, allowing the use of multicast. The conference can then be terminated at any time by any of the members via the transmission of terminate messages to all of the members, such as 3538 and 3540.

Thus, by use of the foregoing, connections between endpoints, such as for teleconferences between teleconferencing systems, can be enabled. This includes, but is not limited to, the exchange of capabilities and notification of connections between endpoints, the addition of auxiliary data streams to such connections, and the merging of existing connections. It will be appreciated that though the foregoing has been described especially with reference to FIGS. 1–35b, that many modifications made be made, by one skilled in the art, without departing from the scope of the invention as described here. The invention is thus to be viewed as limited only by the appended claims which follow.

What is claimed is:

1. In a system wherein a first endpoint is providing data to a plurality of second endpoints each connected by a point-to-point communication channel with said first endpoint, an automatic method for optimizing the transmission of said data to said plurality of second endpoints comprising the following steps:

- a. said first endpoint activating a multicast communication channel having a first multicast address and commencing broadcast of said data over said multicast communication channel;

- b. Said first endpoint transmitting a request message to each of said plurality of second endpoints in order to query each of said second endpoints whether they can receive transmissions broadcast to said first multicast address;
- c. certain of said plurality of second endpoints transmitting an acknowledgment message and said first endpoint receiving said acknowledgment message;
- d. for each said acknowledgment message received from said certain of said plurality of second endpoints which indicates that said certain of said plurality of second endpoints can receive transmissions broadcast to said first multicast address, deactivating said point-to-point communication channel with said first endpoint and said certain of said plurality of second endpoints; and
- e. terminating said broadcast of said data and said multicast communication channel if at least two of said plurality of second endpoints do not transmit said acknowledgment messages containing a positive acknowledgment.

2. The method of claim 1 further comprising the step of receiving detach messages from certain of said plurality of second endpoints, and if at least two of said plurality of second endpoints are not receiving said data, then terminating said broadcast of said data and said multicast communication channel.

3. The method of claim 1 wherein said each acknowledgment message includes a response code.

4. The method of claim 3 wherein said response code indicates whether each said certain of said plurality of second endpoints can receive transmissions broadcast to said first multicast address.

5. The method of claim 1 wherein said data includes teleconference data.

6. The method of claim 1 further comprising, prior to said step of said first endpoint activating said multicast communication channel having a first multicast address, determining whether more than one of said plurality of second endpoints is coupled to said first endpoint on a single communication medium, and if not, aborting said method.

7. The method of claim 6 further comprising, prior to said first endpoint activating said multicast communication channel having said first multicast address, determining whether said single communication medium supports broadcasting to said first multicast address.

8. The method of claim 1 wherein said data includes teleconference data between said first endpoint and said plurality of second endpoints.

9. An apparatus in a first endpoint for transmitting data to a plurality of second endpoints receiving said data from said first endpoint on point-to-point communication channels comprising:

- a. a circuit for activating a multicast communication channel having a first multicast address and commencing broadcast of said data over said multicast communication channel;
- b. a circuit for transmitting a request message to each of said plurality of second endpoints in order to query each of said second endpoints whether they can receive transmissions broadcast to said first multicast address;
- c. a circuit for receiving acknowledgment messages, if any, from certain of said plurality of second endpoints;
- d. a circuit for deactivating each said point-to-point communication channel with said certain of said plurality of second endpoints responsive to receiving each said acknowledgment message; and

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e. a circuit for terminating said broadcast of said data and said multicast communication channel if at least two of said acknowledgment messages containing a positive acknowledgment are not received.

10. The apparatus of claim 9 further comprising a circuit for receiving detach messages from others of said plurality of second endpoints, and if at least two of said plurality of second endpoints are not receiving said data, then terminating said broadcast of said data and said multicast communication channel.

11. The apparatus of claim 9 wherein said each acknowledgment message includes a response code.

12. The apparatus of claim 11 wherein said response code indicates whether each of said certain of said plurality of second endpoints can receive transmissions broadcast to said first multicast address.

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13. The apparatus of claim 9 wherein said data includes teleconference data.

14. The apparatus of claim 9 further comprising a detection circuit operative prior to said first endpoint activating said multicast communication channel having said first multicast address for determining whether more than one of said plurality of second endpoints is coupled to said first endpoint on a single communication medium, and if not, not activating said circuits b and c.

15. The apparatus of claim 14 further comprising, prior to activation of said detection circuit a circuit for determining whether said single communication medium supports broadcasting to said first multicast address.

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